



Docket No. 50353

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: A. Pandya et al.

SERIAL NO.: 09/228,694

EXAMINER: S. Lee

FILED: January 12, 1999

GROUP: 1752

FOR: HYDROXYPHENYL COPOLYMERS AND PHOTORESISTS  
COMPRISING SAME

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THE HONORABLE COMMISSIONER OF PATENTS AND TRADEMARKS  
WASHINGTON, DC 20231

SIR:

DECLARATION UNDER 37 CFR 1.132

1. I am an inventor on the above-identified application assigned to the Shipley Company and the IBM Corporation. I am employed by the Shipley Company and my current job title is Research Chemist A. I have worked in design and development of photoresist compositions since I commenced employment with the Shipley Company in 1992. I received my Ph.D. degree in Chemistry from Virginia Polytechnic University in 1992.

2. I had prepared the below-specified three copolymers (identified herein as Polymers 1, 2 and 3).

Polymer 1: consisted of 80 mole percent para-hydroxystyrene units and 20 mole percent of tert-butylacrylate units;

Polymer 2: consisted of 70 mole percent para-hydroxystyrene units, 10 mole percent meta-hydroxystyrene units and 20 mole percent tert-butylacrylate units;

Polymer 3: consisted of 50 mole percent para-hydroxystyrene units, 30 mole percent meta-hydroxystyrene units and 20 mole percent tert-butylacrylate units.

Each of Polymers 1, 2 and 3 had a weight average molecular weight of 10,000 daltons.

A. Pandya et al.  
U.S.S.N. 09/228,694  
Page 2



3. Each of Polymers 1, 2 and 3 were tested for dissolution rates in aqueous alkaline developer. Briefly, for each of Polymers 1, 2 and 3, an ethyl lactate solution of the polymer was spin coated onto a silicon wafer and solvent removed by heating the coated wafer at 130°C for about 60 seconds on a vacuum hotplate. The dried polymer layers were each about one micron in thickness. Dissolution rates of the polymer films were measured by immersion of the coated wafer in 0.26 N tetramethyl ammonium hydroxide aqueous solution and using a Perkin-Elmer 5900 Development Rate Monitor. The following dissolution rates were measured:

Polymer 1: provided a dissolution rate of 1164 angstroms per second;  
Polymer 2: provided a dissolution rate 703 angstroms per second;  
Polymer 3: provided a dissolution rate of 348 angstroms per second.

4. I further declare that all statements made herein of my own knowledge are true and that all statement made on information and belief are believed to be true; and further, that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, and that such willful false statements may jeopardize the validity of the any patent issued from the above-identified application.

Date: 4-25-2000

Ashish Pandya  
Ashish Pandya

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